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CHANGES IN STATUS AND NEW COMBINATIONS FOR CERTAIN TAXA IN THE OKLAHOMA FLORA¹

U. T. WATERFALL

For more than 20 years the author has been engaged in a study of the Oklahoma flora. During that time he has travelled approximately 140,000 miles within the state, and has made many collections, especially in the areas in, or near, the corners of the state where floristic differences have made the investigations quite interesting.

He has added 235 species, mostly collected by him on these trips, to the known flora of the state. Reports of these, together with descriptions of new taxa and data concerning geographical distributions have been published in a series of 25 papers, the majority of which have appeared in *Rhodora*.

In April, 1960, he made available his "Keys to the Flora of Oklahoma". As the name indicates, it provides keys for the determination of taxa, down through the category of

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forma, which he currently regards as occurring within the state. This multilithed publication is regarded as a temporary expedient intended to present some usable account of the state's flora, pending its eventual expansion into a Flora.

In these "Keys" a few transfers and combinations are indicated, but not actually made. Name-bringing synonymy is not included, and the author is doubtful if such a temporary publication fulfils well the requirements for effective and valid publication of the International Code.

However, since these combinations should be correctly and effectively published so they may be available for use in the future, they follow below.

Selaginella arenicola Underw., var. ***Riddellii*** (Van Eselt.) Waterfall, stat. nov. based on *S. Riddellii* Van Eselt., Contrib. U. S. Nat. Herb. 20: 162. 1918. *S. arenicola* Underw., ssp. *Riddellii* (Van Eselt.) Tryon, Ann. Missouri Bot. Gard. 42: 24. 1955.

The author concludes that a ternary combination under *S. arenicola* best indicates the relationship of this taxon. However, it seems that the varietal status is indicated for uniformity of treatment in this area.

Another related taxon should be made available in the category of *varietas* for those who prefer to use this designation for this concept. It is ***Selaginella arenicola*** Underw., var. ***acanthonota*** (Underw.) Waterfall, stat. nov. based on *S. acanthonota* Underw., Torreyia 2: 172. 1902; *S. rupestris* (L.) Spring, var. *acanthonota* (Underw.) Clute, Fern Allies: 142, 264. 1905; *S. arenicola*, ssp. *acanthonota* (Underw.) Tryon, Ann. Missouri Bot. Gard. 42: 26. 1955.

Eustoma grandiflorum (Raf.) Shinnery, forma ***album*** (Holzinger) Waterfall, comb. nov. based on *Eustoma Russellianum* Griseb., forma *alba* Holzinger, Contrib. U. S. Nat. Herb. 1: 211. 1892. *E. Russellianum*, forma *Fisheri* Standl., Rhodora 34: 176. 1932; *E. grandiflora*, forma *Fisheri* (Standl.) Shinnery, Southw. Nat. 2: 41. 1957.

Although brief, Holzinger's description seems adequate to differentiate this taxon from the typical one. It reads "The plants collected in Neutral Strip are white flowered, but otherwise practically like the species. They may, therefore, be known as 'forma alba' of this species."

Aster paludosus Ait., var. ***hemisphericus*** (Alexander) Waterfall, stat. nov. based on *A. hemisphericus* Alexander in Small, Manual of the Southeastern Flora: 1391 & 1509. 1933. *A. paludosus* Ait., ssp. *hemisphericus* (Alexander) Cronquist, Bull. Torrey Club 74: 145. 1947; *Heleastrum hemisphericum* (Alexander) Shinnery, Field & Lab. 17: 170. 1949.

In our herbarium we have material from Cherokee, Delaware, Latimer, LeFlore, Mayes, Ottawa, Pushmataha and Sequoyah Counties in eastern Oklahoma.

Gaillardia lanceolata Michx., var. **fastigiata** (Greene) Waterfall, comb. et stat. nov. based on *G. fastigiata* Greene, Pittonia 5: 57. 1902. *G. rigida* Small, N. Am. Fl. 34(2): 135. 1915.

Although the peduncles of much of our material assigned to *G. fastigiata* are definitely shorter than those of eastern material referred to *G. lanceolata*, there is quite a bit of variation in this characteristic, and not all specimens can be assigned easily to either taxon. Therefore it seems more significant to relegate this taxon to the varietal status.

Haplopappus divaricatus (Nutt.) Gray, var. **Hookerianus** (T. & G.) Waterfall, comb. nov. based on *Isopappus Hookerianus* T. & G., Fl. N. Am. 2: 239. 1842. *Haplopappus Hookerianus* (T. & G.) Gray, Syn. Fl. 1(2): 131. 1884; *Croptilon Hookerianum* (T. & G.) House, N. Y. State Mus. Bull. 233-234: 61. 1921; *Isopappus validus* Rydb., Brittonia 1: 100. 1931; *Haplopappus validus* (Rydb.) Cory, Rhodora 38: 407. 1936; *Isopappus divaricatus* (Nutt.) T. & G., var. *Hookerianus* (T. & G.) Shinnars, Field & Lab. 18: 157. 1950; *Croptilon divaricatum* (Nutt.) T. & G., var. *Hookerianum* (T. & G.) Shinnars, Field & Lab. 19: 134. 1951.

This is the more robust variety with well-developed heads usually 6-10 mm. wide and usually with 10-15 ray flowers per head. It is found over much of Oklahoma, especially in sandy areas, whereas var. *divaricatus*, with heads usually 4-5 mm. wide and usually with 5-7 ray-flowers, is found in southeastern Oklahoma, mostly in McCurtain County.

Haplopappus phyllocephalus DC., var. **annuus** (Rydb.) Waterfall, stat. nov. based on *Sideranthus annuus* Rydb., Bull. Torrey Club 31: 653. 1904. *Haplopappus phyllocephalus* DC., ssp. *annuus* (Rydb.) Hall, The Genus *Haplopappus*, Carnegie Inst. Publ. No. 389. 58. 1928.

This is the only representative of *H. phyllocephalus* found in our state. It is not common, but is found scattered on sand along rivers in the central and western parts of Oklahoma. According to Hall (l. c. supra) it extends to eastern Colorado and southern Texas.

Along the coast of the Gulf of Mexico another variety is to be found. It is **Haplopappus phyllocephalus** DC., var. **megacephalus** (Nash) Waterfall, stat. nov. based on *Eriocarpum megacephalum* Nash, Bull. Torrey Club 23: 107. 1896. *Haplopappus megacephalus* (Nash) Hitchcock, Trans. Kans. Acad. 16: 131. 1899; *Sideranthus megacephalus* (Nash) Small, Fl. Se. U. S. 1185. 1903.

Helenium amarum Raf., var. **badium** (Gray) Waterfall, comb. nov. based on *H. tenuifolium* Nutt., var. *badium* Gray in Wats. Proc. Am. Acad. 18: 108. 1883. *H. badium* (Gray) Greene, Pittonia 5: 55. 1902.

This variety, with its small heads and purple-brown disc-flowers contrasting with the larger heads and yellow disc-flowers of var. *amarum* (*H. tenuifolium* Nutt.), is found in southwestern Oklahoma in the Wichita Mountains and vicinity. — DEPARTMENT OF BOTANY AND PLANT PATHOLOGY AND THE RESEARCH FOUNDATION, OKLAHOMA STATE UNIVERSITY, STILLWATER.